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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/645,221

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Bruce G. Lindsay

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EXAMINER

LOVEL, KIMBERLY M

ART UNIT

PAPER NUMBER

2167

DATE MAILED: 08/21/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.		Applicant(s)	
	10/645,221		LINDSAY ET AL.	
	Examiner		Art Unit	
	Kimberly Lovel		2167	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 24 May 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-52 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-52 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. This communication is responsive to the Amendment filed 24 May 2006.
2. Claims 1-52 are pending in this application. Claims 1, 18, 35 and 52 are independent. In the Amendment filed 24 May 2006, claims 1, 3, 10, 11, 14, 18, 20, 27, 28, 31, 35, 37, 44, 45, 48 and 52 have been amended. This action is made Final.
3. The rejections of claims 1-52 as being unpatentable over US Patent No 6,889,231 to Souder et al in view of US PGPub 2003/0088589 to Good et al have been withdrawn as necessitated by applicants' amendment.

Declaration under 37 C.F.R. § 1.131

4. The affidavit filed on 24 May 2006 under 37 CFR § 1.131 has been considered but is ineffective to overcome the **Souder et al** reference (US Patent No 6,889,231).

Formal Requirements of a Declaration

5. From MPEP § 715.04[R-2]:

The following parties may make an affidavit or declaration under 37 CFR § 1.131:

- (A) All the inventors of the subject matter claimed.
- (B) An affidavit or declaration by less than all named inventors of an application is accepted where it is shown that less than all named inventors of an application invented the subject matter of the claim or claims under rejection. For example, one of two joint inventors is accepted where it is shown that one of the joint inventors is the sole inventor of the claim or claims under rejection.

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(C) **> If a petition under 37 CFR § 1.47 was granted or the application was accepted under 37 CFR § 1.42 or 1.43, the affidavit or declaration may be signed by the 37 CFR § 1.47 applicant or the legal representative, where appropriate.< .

(D) The assignee or other party in interest when it is not possible to produce the affidavit or declaration of the inventor. *Ex parte Foster*, 1903 C.D. 213, 105 O.G. 261 (Comm'r Pat. 1903).

Affidavits or declarations to overcome a rejection of a claim or claims must be made by the inventor or inventors of the subject matter of the rejected claim(s), a party qualified under 37 CFR §§ 1.42, 1.43, or 1.47, or the assignee or other party in interest when it is not possible to produce the affidavit or declaration of the inventor(s). Thus, where all of the named inventors of a pending application are not inventors of every claim of the application, any affidavit under 37 CFR § 1.131 could be signed by only the inventor(s) of the subject matter of the rejected claims. Further, where it is shown that a joint inventor is deceased, refuses to sign, or is otherwise unavailable, the signatures of the remaining joint inventors are sufficient. However, the affidavit or declaration, even though signed by fewer than all the joint inventors, must show completion of the invention by all of the joint inventors of the subject matter of the claim(s) under rejection. *In re Carlson*, 79 F.2d 900, 27 USPQ 400 (CCPA 1935).

An affidavit is a statement in writing made under oath before a notary public, magistrate, or officer authorized to administer oaths. See MPEP § 604 through § 604.06 for additional information regarding formal requirements of affidavits. 37 CFR § 1.68 permits a declaration to be used instead of an affidavit. The declaration must include an acknowledgment by the declarant that willful false statements and the like are punishable by fine or imprisonment, or both (18 U.S.C. § 1001) and may jeopardize the validity of the application or any patent issuing thereon. The declarant must set forth in the body of the declaration that all statements made of the declarant's own knowledge are true and that all statements made on information and belief are believed to be true.

6. From MPEP 602 (II):

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U.S. Patent and Trademark Office personnel are authorized to accept a statutory declaration under 28 U.S.C. § 1746 filed in the U.S. Patent and Trademark Office in lieu of an "oath" or declaration under 35 U.S.C. § 25 and 37 CFR § 1.68, provided that the statutory declaration otherwise complies with the requirements of law. Section 1746 of Title 28 of the United States Code provides:

Whenever, under any law of the United States or under any rule, regulation, order, or requirement made pursuant to law, any matter is required to be supported, evidenced, established, or proved by sworn declaration, verification, certificate, statement, oath or affidavit, in writing of the person making the same (other than a deposition, or an oath of office, or an oath required to be taken before a specified official other than notary public), such matter may, with like force and effect, be supported, evidenced, established, or proved by the unsworn declaration, certificate, verification, or statement, in writing of such person which is subscribed by him, as true under penalty of perjury, and dated, in substantially the following form:

[1]. If executed without the United States:

"I declare (or certify, verify, or state) under penalty of perjury under the laws of the United States of America that the foregoing is true and correct. Executed on (date).

(Signature)."

[2] If executed within the United States its territories, possessions, or commonwealths:

"I declare (or certify, verify, or state) under penalty of perjury that the foregoing is true and correct. Executed on (date).

(Signature)."

7. The submitted declaration fulfills all of the formal requirements for submission of a declaration under 37 C.F.R. §1.131. The examiner will now consider the merits of the declaration.

Allegation of FACTS

8. MPEP § 715.07 (I) states, *inter alia*,

The essential thing to be shown under 37 CFR § 1.131 is priority of invention and this may be done by any satisfactory evidence of the fact. FACTS, not conclusions, must be alleged. Evidence in the form of exhibits may accompany the affidavit or declaration. Each exhibit relied upon should be specifically referred to in the affidavit or declaration, in terms of what it is relied upon to show.

A general allegation that the invention was completed prior to the date of the reference is not sufficient. *Ex parte Saunders*, 1883 C.D. 23, 23 O.G. 1224 (Comm'r Pat. 1883). Similarly, a declaration by the inventor to the effect that his or her invention was conceived or reduced to practice prior to the reference date, without a statement of facts demonstrating the correctness of this conclusion, is insufficient to satisfy 37 CFR § 1.131.

The affidavit or declaration and exhibits must clearly explain which facts or data applicant is relying on to show completion of his or her invention prior to the particular date. Vague and general statements in broad terms about what the exhibits describe along with a general assertion that the exhibits describe a reduction to practice "amounts essentially to mere pleading, unsupported by proof or a showing of facts" and, thus, does not satisfy the requirements of 37 CFR § 1.131(b). *In re Borkowski*, 505 F.2d 713, 184 USPQ 29 (CCPA 1974). Applicant must give a clear explanation of the exhibits pointing out exactly what facts are established and relied on by applicant. 505 F.2d at 718-19, 184 USPQ at 33. See also *In re Harry*, 333 F.2d 920, 142 USPQ 164 (CCPA 1964) (Affidavit "asserts that facts exist but does not tell what they are or when they occurred.").

9. In the case of the instant declarations, the Applicants have alleged conclusions, not facts as is required under 37 C.F.R. § 1.131.

The declarations allege that generally, the invention was conceived on or about 22 March 2002 and was reduced to practice on or before 1 July 2002, a conclusion that has yet to be drawn based upon the submitted evidence.

A proper declaration is required to allege FACTS, which are fully supported by evidence.

The evidence submitted in support of the Applicants' declarations includes an **Exhibit A**, which is a product data sheet and **Exhibit B**, which is an attached paper that is referred to by Exhibit A. One fact that could be alleged based upon the document in Exhibit A is that (for instance) the inventors disclosed the proposed invention to the company's intellectual property department before September 13, 2002. This FACT would be fully supported by the document, since the document summarizes the invention, describes how the invention solves the problem or achieves an advantage and how it differs from previous invention.

This evidence, however, by itself, fails to support the conclusion alleged in the Applicants' declarations that the claimed invention was reduced to practice prior to 1 July 2002.

As such, the Applicants have failed to meet their burden under 37 C.F.R. § 1.131(b).

Nevertheless, in order to advance prosecution of the application, the examiner will proceed to consider the remaining merits of the declaration and supporting evidence that has been submitted.

Conception

10. From MPEP § 715.07 (III):

The affidavit or declaration must state FACTS and produce such documentary evidence and exhibits in support thereof as are available to show conception and completion of invention in this country or in a NAFTA or WTO member country (MPEP § 715.07(c)), at least the conception being at a date prior to the effective date of the reference. Where there has not been reduction to practice prior to the date of the reference, the applicant or patent owner must also show diligence in the completion of his or her invention from a time just prior to the date of the reference continuously up to the date of an actual reduction to practice or up to the date of filing his or her application (filing constitutes a constructive reduction to practice, 37 CFR § 1.131). As discussed above, 37 CFR § 1.131(b) provides three ways in which an applicant can establish prior invention of the claimed subject matter. The showing of facts must be sufficient to show:

(A) reduction to practice of the invention prior to the effective date of the reference; or

(B) conception of the invention prior to the effective date of the reference coupled with due diligence from prior to the reference date to a subsequent (actual) reduction to practice; or

(C) conception of the invention prior to the effective date of the reference coupled with due diligence from prior to the reference date to the filing date of the application (constructive reduction to practice).

Conception is the mental part of the inventive act, but it must be capable of proof, as by drawings, complete disclosure to another person, etc. In *Mergenthaler v. Scudder*, 1897 C.D. 724, 81 O.G. 1417 (D.C. Cir. 1897), it was established that conception is more than a mere vague idea of how to solve a problem; the means themselves and their interaction must be comprehended also.

11. From MPEP § 2138.04[R-1]:

Conception has been defined as "the complete performance of the mental part of the inventive act" and it is "the formation in the mind of the inventor of a definite and permanent idea of the complete and operative invention as it is thereafter to be applied in practice...." *Townsend v. Smith*, 36 F.2d 292, 295, 4 USPQ 269, 271 (CCPA 1930). "[C]onception is established when the invention is made sufficiently clear to enable one skilled in the art to reduce it to practice without the exercise of extensive experimentation or the exercise of inventive skill." *Hiatt v. Ziegler*, 179 USPQ 757, 763 (Bd. Pat. Inter. 1973). Conception has also been defined as a disclosure of an invention which enables one skilled in the art to reduce the invention to a practical form without "exercise of the inventive faculty." *Gunter v. Stream*, 573 F.2d 77, 197 USPQ 482 (CCPA 1978). See also *Coleman v. Dines*, 754 F.2d 353, 224 USPQ 857 (Fed. Cir. 1985) (It is settled that in establishing conception a party must show possession of every feature recited in the count, and that every limitation of the count must have been known to the inventor at the time of the alleged conception. Conception must be proved by corroborating evidence.)

12. In this case, the date of conception is alleged to have occurred prior to 13 September 2002. However, actual conception of the entire claimed invention is not fully supported by **Exhibit A** and **Exhibit B** submitted as evidence.

The Applicants have failed to resolve (at least) the following issues which call into question the actual conception of the entire claimed invention as alleged in the Applicants' declaration:

* Whether **Exhibits A and B** disclose the entire claimed invention. Paragraph [0007], lines 1-3 of the declaration states, "The claimed invention is generally described on pages 1-2 of Exhibit A and pages 1-7 of Exhibit B, and in particular, is provided in the software code provided on pages 3-6 of Exhibit B." A conclusion that every aspect of

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claims 1-52 are described in Exhibits A and B based on the indefiniteness of the term "generally." Also, Paragraph [0007], lines 3-4 states, "The features provided in claims 2-17, 19-34 and 36-51 are generally inferred in **Exhibits A and B**. The terminology of "generally inferred" does not lead to the conclusion that evidence of the features of claims 2-17, 19-34 and 36-51 are conclusively in Exhibits A and B.

Diligence

13. From MPEP § 715.07(a):

Where conception occurs prior to the date of the reference, but reduction to practice is afterward, it is not enough merely to allege that applicant or patent owner had been diligent. *Ex parte Hunter*, 1889 C.D. 218, 49 O.G. 733 (Comm'r Pat. 1889). Rather, applicant must show evidence of facts establishing diligence.

What is meant by diligence is brought out in *Christie v. Seybold*, 1893 C.D. 515, 64 O.G. 1650 (6th Cir. 1893). In patent law, an inventor is either diligent at a given time or he is not diligent; there are no degrees of diligence. An applicant may be diligent within the meaning of the patent law when he or she is doing nothing, if his or her lack of activity is excused. Note, however, that the record must set forth an explanation or excuse for the inactivity; the USPTO or courts will not speculate on possible explanations for delay or inactivity. See *In re Nelson*, 420 F.2d 1079, 164 USPQ 458 (CCPA 1970). Diligence must be judged on the basis of the particular facts in each case. See MPEP § 2138.06 for a detailed discussion of the diligence requirement for proving prior invention.

Under 37 CFR 1.131, the critical period in which diligence must be shown begins just prior to the effective date of the reference or activity and ends with the date of a reduction to practice, either actual or constructive (i.e., filing a United States patent application). Note, therefore, that only diligence before reduction to practice is a material consideration. The "lapse of time between the completion or reduction to practice of an invention and the filing of an application thereon" is not relevant to an affidavit or declaration under 37 CFR 1.131. See *Ex parte Merz*, 75 USPQ 296 (Bd. App. 1947).

14. In this case, the [0009] of the declaration states "We were diligent from the date of conception in reducing the claimed invention to practice and in pursuing, preparing, and filing the Patent Application. More specifically, on July 8, 2002, information similar to that shown in Exhibits A and B was presented to a patent attorney/agent to determine whether a patent application should be prepared." However, the Exhibits submitted as evidence fail to display diligence in reducing the claimed invention to practice.

Reduction to Practice

15. Regarding reduction to practice, MPEP § 715.07 states:

In general, proof of actual reduction to practice requires a showing that the apparatus actually existed and worked for its intended purpose.

16. From MPEP § 2138.05:

Reduction to practice may be an actual reduction or a constructive reduction to practice which occurs when a patent application on the claimed invention is filed. The filing of a patent application serves as conception and constructive reduction to practice of the subject matter described in the application. Thus the inventor need not provide evidence of either conception or actual reduction to practice when relying on the content of the patent application. *Hyatt v. Boone*, 146 F.3d 1348, 1352, 47 USPQ2d 1128, 1130 (Fed. Cir. 1998).

When a party to an interference seeks the benefit of an earlier-filed U.S. patent application, the earlier application must meet the requirements of 35 U.S.C. § 120 and 35 U.S.C. § 112,

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first paragraph for the subject matter of the count. The earlier application must meet the enablement requirement and must contain a written description of the subject matter of the interference count. *Hyatt v. Boone*, 146 F.3d 1348, 1352, 47 USPQ2d 1128, 1130 (Fed. Cir. 1998). Proof of a constructive reduction to practice requires sufficient disclosure under the "how to use" and "how to make" requirements of 35 U.S.C. § 112, first paragraph. *Kawai v. Metlesics*, 480 F.2d 880, 886, 178 USPQ 158, 163 (CCPA 1973) (A constructive reduction to practice is not proven unless the specification discloses a practical utility where one would not be obvious. Prior art which disclosed an anticonvulsant compound which differed from the claimed compound only in the absence of a -CH₂- group connecting two functional groups was not sufficient to establish utility of the claimed compound because the compounds were not so closely related that they could be presumed to have the same utility.). The purpose of the written description requirement is "to ensure that the inventor had possession, as of the filing date of the application relied on, of the specific subject matter later claimed by him." *In re Edwards*, 568 F.2d 1349, 1351-52, 196 USPQ 465, 467 (CCPA 1978). The written description must include all of the limitations of the interference count, or the applicant must show that any absent text is necessarily comprehended in the description provided and would have been so understood at the time the patent application was filed. Furthermore, the written description must be sufficient, when the entire specification is considered, such that the "necessary and only reasonable construction" that would be given it by a person skilled in the art is one that clearly supports each positive limitation in the count. *Hyatt v. Boone*, 146 F.3d at 1354-55, 47 USPQ2d at 1130-1132 (Fed. Cir. 1998) (The claim could be read as describing subject matter other than that of the count and thus did not establish that the applicant was in possession of the invention of the count.). See also *Bigham v. Godtfredsen*, 857 F.2d 1415, 1417, 8 USPQ2d 1266, 1268 (Fed. Cir. 1988) ("[t]he generic term halogen comprehends a limited number of species, and ordinarily constitutes a sufficient written description of the common halogen species, except where the halogen species are patentably distinct).

"In an interference proceeding, a party seeking to establish an actual reduction to practice must satisfy a two-prong test: (1) the party constructed an embodiment or performed a process that met every element of the interference count, and (2) the embodiment or process operated for its intended purpose." *Eaton v. Evans*, 204 F.3d 1094, 1097, 53 USPQ2d 1696, 1698 (Fed. Cir. 2000).

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The same evidence sufficient for a constructive reduction to practice may be insufficient to establish an actual reduction to practice, which requires a showing of the invention in a physical or tangible form that shows every element of the count. *Wetmore v. Quick*, 536 F.2d 937, 942, 190 USPQ 223, 227 (CCPA 1976). For an actual reduction to practice, the invention must have been sufficiently tested to demonstrate that it will work for its intended purpose, but it need not be in a commercially satisfactory stage of development.

If a device is so simple, and its purpose and efficacy so obvious, construction alone is sufficient to demonstrate workability. *King Instrument Corp. v. Otari Corp.*, 767 F.2d 853, 860, 226 USPQ 402, 407 (Fed. Cir. 1985).

For additional cases pertaining to the requirements necessary to establish actual reduction to practice see *DSL Dynamic Sciences, Ltd. v. Union Switch & Signal, Inc.*, 928 F.2d 1122, 1126, 18 USPQ2d 1152, 1155 (Fed. Cir. 1991) ("events occurring after an alleged actual reduction to practice can call into question whether reduction to practice has in fact occurred"); *Corona v. Dovan*, 273 U.S. 692, 1928 C.D. 252 (1928) ("A process is reduced to practice when it is successfully performed. A machine is reduced to practice when it is assembled, adjusted and used. A manufacture [i.e., article of manufacture] is reduced to practice when it is completely manufactured. A composition of matter is reduced to practice when it is completely composed." 1928 C.D. at 262-263 (emphasis added).); *Fitzgerald v. Arbib*, 268 F.2d 763, 765-66, 122 USPQ 530, 531-32 (CCPA 1959) ("the reduction to practice of a three-dimensional design invention requires the production of an article embodying that design" in "other than a mere drawing").

"The nature of testing which is required to establish a reduction to practice depends on the particular facts of each case, especially the nature of the invention." *Gellert v. Wanberg*, 495 F.2d 779, 783, 181 USPQ 648, 652 (CCPA 1974) ("an invention may be tested sufficiently ... where less than all of the conditions of actual use are duplicated by the tests"); *Wells v. Fremont*, 177 USPQ 22, 24-5 (Bd. Pat. Inter. 1972) ("even where tests are conducted under bench' or laboratory conditions, those conditions must fully duplicate each and every condition of actual use' or if they do not, then the evidence must establish a relationship between the subject matter, the test condition and the intended functional setting of the invention," but it is not required that all the

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conditions of all actual uses be duplicated, such as rain, snow, mud, dust and submersion in water).

17. In this case, [0009] of the declaration states "Generally, the invention was conceived on or about March 22, 2002 and was reduced to practice on or about July 1, 2002. An exhaustive series of experiments were conducted on the invention testing its validity from March 2002 to July 2002. The testing was quite rigorous and required substantial time, money, and effort to undertake. " However, the documents concerning the experiments were not submitted with the declaration and reduction to practice is not fully supported by **Exhibit A** and **Exhibit B** submitted as evidence.

18. For the reasons cited above, the declarations filed by the Applicants under 37 C.F.R. § 1.131 fail to establish that the claimed invention was reduced to practice prior to the critical period, and also fails to establish that the claimed invention was conceived prior to the critical period and diligently reduced to practice thereafter. As such, the affidavit is insufficient to establish invention prior to the prior art references relied upon in the rejections of record. The use of **Souder et al** as a prior art reference maintained by the examiner.

Claim Objections

19. Claims 1, 5, 18, 22, 35, 39 and 52 are objected to because each claim recites "production/consumption." It is unclear what is exactly meant by the recitation of "production/consumption."

Appropriate correction is required.

Finality of an Office action would be rendered premature only by the introduction of new grounds of **rejection**, but not by the introduction of new grounds of **objection**.
See MPEP § 706.07(a).

Claim Rejections - 35 USC § 102

20. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

21. Claim 52 is rejected under 35 U.S.C. 102(e) as being anticipated by US Patent No 6,889,231 to Souder et al (hereafter Souder et al).

Referring to claim 52, Souder et al disclose a data replication system (see abstract), said method comprising:

means for assigning a delta production/consumption value for arbitrary data sources and targets operable for replicating data (see column 7, lines 33-39 – according to paragraph [0003], line 2 of the applicant's specification, delta is a synonym for a change record);

means for embedding replication tracking information within said data (see column 10, lines 37-45 – the tracking information is sent with the data in a stream; and column 10, line 62 – column 11, line 15 - tags);

means for using an apply service at said target site to embed and analyze said tracking information during a crash recovery sequence (see column 10, line 46 – column 11, line 33 – the log and tags track the status and quality-of-service of the replications), wherein said apply service utilizes an in-memory index (see column 43, lines 16-18 – change sequence number (CSN)) when a system crash occurs and a recovery process is initiated by said distributed computing system (see column 43, line 36 – column 45, line 42).

Claim Rejections - 35 USC § 103

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

22. Claims 1-13, 15-30, 32-47 and 49-51 are rejected under 35 U.S.C. 103(a) as being unpatentable over US Patent No 6,889,231 to Souder et al in view of US PGPub 2003/0088589 to Good et al (Good et al).

Referring to claim 1, Souder et al disclose a method of data replication in a distributed computing system (see abstract), said method comprising:

assigning a delta production/consumption value for arbitrary data sources and targets operable for replicating data (see column 7, lines 33-39 – according to

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paragraph [0003], line 2 of the applicant's specification, delta is a synonym for a change record);

embedding replication tracking information within said data (see column 10, lines 37-45 – the tracking information is sent with the data in a stream; and column 10, line 62 – column 11, line 15 - tags);

atomically and independently applying updates at a target site using said replication tracking information (see column 5, lines 30-69 – the system routes specified information to specified destinations or target sites; and column 46, lines 2-5); and

using an apply service at said target site to embed and analyze said tracking information during a crash recovery sequence (see column 10, line 46 – column 11, line 33 – the log and tags track the status and quality-of-service of the replications), wherein said apply service utilizes an in-memory index (see column 43, lines 16-18 – change sequence number (CSN)) when a system crash occurs and a recovery process is initiated by said distributed computing system (see column 43, line 36 – column 45, line 42).

However, even though Souder et al teach embedding replication tracking information within the data, Souder et al fail to explicitly teach the further limitation wherein the tracking information comprises a timestamp and a contiguous sequence number. Good et al teach a method for tracking information (see abstract), including the further limitation wherein said replication tracking information comprises a timestamp and a contiguous sequence number (see paragraph [0026]).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to utilize Good et al's method of using a timestamp and a sequence number for tracking information as a subcomponent to Souder's et al's method of tracking information. One would have been motivated to do so in order to accurately recover information in case the system crashes.

Referring to claim 2, the combination of Souder et al and Good et al (hereafter Souder/Good) discloses the method of claim 1, further comprising using a capture service at a source site for flow control, wherein said capture service comprises a buffer (Souder et al: see column 9, lines 48-57 and column 11, lines 36-56 – the conventional definition of a buffer is memory the temporarily stores data to compensate for differences in the transfer rate of data from one device to another; therefore, the staging areas are considered to represent the buffer which is responsible for flow control).

Referring to claim 3, Souder/Good discloses the method of claim 2, wherein said capture service is adapted to prevent resending of an already sent delta production/consumption value from a source site to said target site (Souder et al: see column 43, lines 44-46 and column 44, lines 34-44 – the CSN value prevents resending data).

Referring to claim 4, Souder/Good discloses the method of claim 1, further comprising using a monitor service to maintain a state of ongoing replications for status and quality-of-service tracking (Souder et al: see column 10, line 46 – column 11, line 33 – the log and tags track the status and quality-of-service of the replications).

Referring to claim 5, Souder/Good discloses the method of claim 1, further comprising allowing data sources and targets of arbitrary data formats (Souder et al: see column 5, lines 18-29), including relational DBMSs, files, query results, XML DBMSs to be replicated, through an abstraction of delta (change) production/consumption (Souder et al: see column 3, line 66 – column 4, line 60), and a monotonically increasing timestamp on each said delta (Souder et al: see column 32, line 36 – column 33, line 26).

Referring to claim 6, Good/Souder discloses the method of claim 1, wherein said replication tracking information is used to determine if a given delta has been previously applied to said target site (Souder et al: see column 32, line 36 – column 33, line 26).

Referring to claim 7, Souder/Good discloses the method of claim 1, wherein in an event of a crash in said system, said target site requests retransmission of replicated data from said source site beginning at a given timestamp and sequence number (Good et al: see paragraphs [0031]-[0034]).

Referring to claim 8, Souder/Good discloses the method of claim 1, wherein said sequence number and timestamp are operable to determine if any transaction has been lost during transmission from said source site to said target site, wherein said sequence number is a contiguous series of numbers increasing from 1 to n and said timestamp is any monotonically increasing sequence of numbers (Good et al: see paragraphs [0031]-[0034]).

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Referring to claim 9, Souder/Good discloses the method of claim 1, wherein said target site is operable to apply deltas autonomously and independently from said source site (Souder et al: see column 3, lines 66-67 and column 13, lines 1-55 – the system is asynchronous).

Referring to claim 10, Souder/Good discloses the method of claim 2, wherein said capture and apply services send periodic signals to said monitor service to track a progression of replication for answering status and quality of service queries (Souder et al: see column 19, line 37 – column 20, line 37; column 22, line 43 – column 23, line 35).

Referring to claim 11, Souder/Good discloses the method of claim 2, wherein said capture service selectively removes replication requests which lag other requests by more than a predetermined permissible amount (Good et al: see paragraph [0031]).

Referring to claim 12, Souder/Good discloses the method of claim 1, wherein said replicated data further comprises origination tags, wherein said origination tags are operable to prevent duplicate replications of a same data from occurring at said target site via different routes (Souder et al: see column 10, line 62 – column 11, line 15).

Referring to claim 13, Souder/Good discloses the method of claim 1, wherein said apply service utilizes run-length encoding to compactly describe an interval of timestamps and sequence numbers (Good et al: see paragraphs [0030]-[0031]).

Referring to claim 15, Souder/Good discloses the method of claim 1, wherein said target site autonomously tracks a progression of replication of said data by maintaining a separate table of applied deltas (Good et al: see paragraph [0026] – a

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change sequence number is represented by a tuple, therefore it can be considered to be placed in a table).

Referring to claim 16, Souder/Good discloses the method of claim 15, wherein said separate table comprises an entry, wherein each entry in said table comprises said timestamp and said sequence number of a delta, and wherein said sequence number is operable to determine if a transaction has been misplaced in said distributed computing system (see paragraphs [0026-0028]).

Referring to claim 17, Souder/Good discloses the method of claim 15, wherein a file-based target site can maintain said table in a separate file and perform atomic updates by writing said file to a disk before updated files are written to said disk (see column 41, lines 36-50).

Referring to claims 18-30 and 32-34

The program storage device readable by computer to perform a method of data replication of claims 18-30 and 32-34 are rejected on the same grounds as the method of data replication of claims 1-13 and 15-17.

Referring to claim 35, Souder et al discloses a data replication system comprising:

a source site comprising data to be replicated (Source Site 2400), wherein said data is embedded with replication tracking information (see column 10, lines 37-45 – the tracking information is sent with the data in a stream; and column 10, line 62 – column 11, line 15 - tags);

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a target site connected by a communication channel to said source site (Destination Site 2402), wherein said target site is operable to receive updates using said replication tracking information, wherein said target site comprises an apply service operable to embed and analyze said tracking information during a crash recovery sequence (see column 10, line 46 – column 11, line 33 – the log and tags track the status and quality-of-service of the replications), and wherein said apply service utilizes an in-memory index (see column 43, lines 16-18 – change sequence number (CSN)) when a system crash occurs and a recovery process is initiated by said data replication system (see column 43, line 36 – column 45, line 42); and

a delta production/consumption interface in communication with arbitrary data sources and targets (see column 7, lines 33-39 – according to paragraph [0003], line 2 of the applicant's specification, delta is a synonym for a change record).

However, even though Souder et al teach embedding replication tracking information within the data, Souder et al fail to explicitly teach the further limitation wherein the tracking information comprises a timestamp and a contiguous sequence number. Good et al teach the feature of tracking information (see abstract), including the further limitation wherein said replication tracking information comprises a timestamp and a contiguous sequence number (see paragraph [0026]).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to utilize Good et al's feature of using a timestamp and a sequence number for tracking information as a subcomponent to Souder's et al's system for

tracking information. One would have been motivated to do so in order to accurately recover information in case the system crashes.

Referring to claims 36-47 and 49-51

The data replication system of claims 36-47 and 49-51 are rejected on the same grounds as the method of data replication of claims 1-13 and 15-17.

23. Claims 14, 31 and 48 are rejected under 35 U.S.C. 103(a) as being unpatentable over US Patent No 6,889,231 to Souder et al in view of US PGPub 2003/0088589 to Good et al as applied to respectively to claims 2, 19 and 36 above, and further in view of US Patent No. 6,006,267 to Nguyen et al (hereafter Nguyen et al).

Referring to claim 14, Souder/Good discloses a capture service at a source site for flow control, wherein said capture service comprises a buffer. However, Souder/Good fails to explicitly disclose the further limitation communication between said capture service and said apply service occurs over an unreliable user datagram protocol (UDP) communication channel. Nguyen et al discloses a method for communication between hosts (see abstract) including the further limitation wherein communication between said capture service (host) and said apply service (host) occurs over an unreliable user datagram protocol (UDP) communication channel (see UDP/IP) (see column 3, lines 12-17).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to utilize Nguyen et al's feature of communicating with an unreliable user datagram protocol as the type of communication protocol used by

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Souder/Good. One would have been motivated to do so in order to utilize a protocol that requires less bandwidth and computation (Nguyen et al: see column 3, lines 16-17) and thus provides the ability to share information easily and in a timely fashion (Souder et al: see column 1, lines 31-32).

Referring to claim 31

Claim 31, which is dependent on the program storage device readable by computer to perform a method of data replication of claim 19 is rejected on the same grounds as claim 14, which is dependent on the method of data replication of 2.

Referring to claim 48

Claim 48, which is dependent on the data replication system of claim 36 is rejected on the same grounds as claim 14, which is dependent on the method of data replication of claim 2.

Response to Arguments

24. Applicant's arguments filed 24 May 2006 have been fully considered but are not persuasive.

Referring to applicant's remarks on pages 17-18 regarding features of claims 1, 18, 35 and 52 not being taught in the prior art references of record: Applicant argues that claims 1, 18, and 35 recite the limitation "[means for] using an apply service at said target site to embed and analyze said tracking information during a crash recovery sequence, wherein said apply service utilizes as in-memory index when a system crash occurs and a recovery process is initiated by said distributed computing [data

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replication] system” and furthermore claim 35 recites the limitation, “... wherein said target site comprises an apply service operable to embed and analyze said tracking information during a crash recovery sequence, and wherein process is initiated by said data replication system ...” which are not taught in the prior art references made of record.

The Examiner respectfully disagrees. Souder et al disclose the limitation of using an apply service at said target site to embed and analyze said tracking information during a crash recovery sequence (see column 10, line 46 – column 11, line 33 – the log and tags track the status and quality-of-service of the replications), wherein said apply service utilizes an in-memory index (see column 43, lines 16-18 – change sequence number (CSN)) when a system crash occurs and a recovery process is initiated by said distributed computing system (see column 43, line 36 – column 45, line 42). Also Souder et al disclose the limitation wherein said target site comprises an apply service operable to embed and analyze said tracking information during a crash recovery sequence (see column 10, line 46 – column 11, line 33 – the log and tags track the status and quality-of-service of the replications), and wherein said apply service utilizes an in-memory index (see column 43, lines 16-18 – change sequence number (CSN)) when a system crash occurs and a recovery process is initiated by said data replication system (see column 43, line 36 – column 45, line 42). Furthermore, Souder et al discloses the limitation of means for using an apply service at said target site to embed and analyze said tracking information during a crash recovery sequence (see column 10, line 46 – column 11, line 33 – the log and tags track the status and quality-

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of-service of the replications), wherein said apply service utilizes an in-memory index (see column 43, lines 16-18 – change sequence number (CSN)) when a system crash occurs and a recovery process is initiated by said distributed computing system (see column 43, line 36 – column 45, line 42).

Referring to applicant's remarks on pages 18 regarding claims 1, 18, 35 and 52 having a limitation not being taught in the prior art references of record: Applicant argues "Souder does not teach applying both the tags and deltas atomically. Rather, Souder simply teaches that the information system routes specified information to the specified destinations, but this does not address atomic updates, as provided by the Applicants' claimed invention. The information being routed in Souder is a stream of replication deltas, so there is no way in which all the information can be transmitted atomically in Souder, which is contrary to the Applicants' claimed invention."

The Examiner respectfully disagrees. According to column 46, lines 2-5 of Souder et al, the changes (deltas) captured, propagated and applied may belong to transactions, which may be made permanent by a single atomic operation. The tags are considered to be embedded with the deltas and therefore are also sent with the transaction.

25. Referring to applicant's remarks on page 18 regarding the limitations of claims 3, 20 and 37 not being taught in the prior art references of record: Applicant argues that "wherein said capture service is adapted to prevent resending of an already sent delta production/consumption value from a source site to said target site" is not taught in the prior art references made of record.

The Examiner respectfully disagrees. Souder et al discloses the limitation wherein said capture service is adapted to prevent resending of an already sent delta production/consumption value from a source site to said target site (Souder et al: see column 43, lines 44-46 and column 44, lines 34-44 – the CSN value prevents resending data).

26. Applicant's arguments with respect to claims 14 and 31 have been considered but are moot in view of the new ground(s) of rejection.

27. In response to applicant's argument that there is no suggestion to combine the references, the examiner recognizes that obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art. See *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988) and *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992). In this case, knowledge generally available to one of ordinary skill in the art was utilized. The use of a timestamp and a sequence number as tracking information to accurately recover information in the case that the system crashes is considered to represent knowledge generally available to one of ordinary skill in the art.

Conclusion

28. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL.** See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

Contact Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kimberly Lovel whose telephone number is (571) 272-2750. The examiner can normally be reached on 8:00 - 4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John Cottingham can be reached on (571) 272-7079. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Kimberly Lovel
Examiner
Art Unit 2167

kml
8 Aug 2006


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JPW 18 August 2006